

to such an extent, for instance, that the variation of one degree of Fahrenheit's thermometer shall cause the clock to gain or lose five minutes a day; we shall at once have an instrument which will register the temperature of the aggregate of every vibration it has made.

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ART. VIII.—*Meteorological Observations at Bendigo.* By  
LUDWIG BECKER, ESQ.

IN the present paper I am desirous to give the result of my observations on the weather, at Bendigo, during a period of fifteen months, viz., from the 1st December, 1852, to the 28th February, 1854. During which period I have prepared complete meteorological tables.\*

During my stay at Bendigo I was unable to procure either a barometer or a thermometer, and the stated grade of temperature met with in the tables was kindly furnished to me by a gentleman who was fortunate enough to have been in possession of the necessary instruments.

My especial object in preparing these meteorological tables is, that in connection with, and compared to, later observations, it should tend to fix the character of the seasons and their phenomena.

So far as I have had the opportunity of observing the character of the weather at Bendigo, I have come to the following conclusions:—

1. Prevailing winds come generally from N. W., most of the rain coming from the same quarter.

2. During the day there is more or less wind, followed by a calm and clear night.

3. Warm days and hot winds are generally succeeded in the evening by a cold southerly wind, as if the effect of the sea breeze extended as far inland as Bendigo.

4. The hot winds announce themselves in the morning by a thick hazy atmosphere, with a light south-easterly breeze; the wind, increasing in force, veers from south-east to east, and gradually wears round to the north-west, which ends in a cold south wind, *thus making a perfect circle*; the greatest heat is felt when the wind is blowing from the north-west; the hot wind is generally followed by rain.

5. The whirlwinds prevailing during fine weather and gentle breezes, but do not indicate rain.

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\* The original meteorological tables are deposited in the Museum of Natural History.

6. During very hot and dry weather I have found my opossum rug discharging electric sparks, with a cracking noise, when rubbed with the hand; sometimes I observed a similar electric phenomenon, although in a less degree, on a common wool blanket.

7. There are few thunderstorms, compared to those in other countries, although the atmosphere seemed to be fully charged with electricity. Very vivid flashes of lightning, marked with the peculiarity of always taking a perpendicular direction, were accompanied by heavy showers.

8. The atmosphere is generally clear, and the stars visible, even close to the horizon, with but a very slight scintillating appearance. The firmament is more blue than that above Melbourne, but less brilliant than in Van Diemen's Land. Fogs I observed only twice or three times, early in the morning, lasting, however, but a very short time; nevertheless, the atmosphere is occasionally of a yellowish-grey colour, which is the effect of the large bush fires, which occasionally originate during hot winds. The opinions of the causes of bush fires are various; according to my observations, it may be attributed:—

To carelessness with camp fires, &c.

To a slumbering fire in a hollow tree, in places where the bush fires seem to be extinct. In such hollow trees, for several weeks, the fire is smouldering, and, during the hot winds, is fanned into flames, and thus communicates to the parched vegetation, sometimes at a very great distance, not only sparks, but burning charcoal of considerable size.

In places far in the interior, where no man could be supposed to have penetrated, the origin of bush fires can be attributed to lightning, and to the friction of dried branches, during the hot northerly winds. One could scarcely imagine, without having seen it, what power these winds exercise upon the branches of a tree, and what a peculiar noise is produced by the friction of the branches, during the prevalence of the gale. Considering the friction of thousands of branches in the forest, aided by a high temperature, scarcely endurable to animals, it sufficiently accounts for those fires in the interior, the origin of which could be attributed to no other agency, except, perhaps, lightning.

9. Frost is not unfrequent during the winter season; ice, however, is seldom seen, and rarely attains the thickness of a quarter of an inch. Snow I did not observe during the whole of my stay at Bendigo. Rain and storms are

prevalent in the winter season, which generally begins in May and ends with October. The days and nights are often very cold; sometimes, however, even in the winter season, I have experienced a warm calm day, followed by a clear starry night.

10. Of shooting stars or aerolites I have seen but few; and during the months of August and November, which it is well known are those in which they are most numerous, I did not observe a single one, although I looked for them on many nights.

11. The Zodiacal light appeared often so luminous as to be almost equal in brilliancy to that observed within the tropics.

12. At Bendigo I never observed any *Aurora Australis*; but in Tasmania, where this beautiful phenomenon is frequent, I have witnessed most brilliant displays.

13. One of the most striking peculiarities of Bendigo consists in the sudden and violent currents of wind from the north-west; these are of frequent occurrence, and of short duration. I will here avail myself of a few lines from my diary, descriptive of this remarkable phenomenon.

“Night. At a great distance, apparently of several miles, in a north-westerly direction, a peculiar rushing noise is heard, which approaches closer and closer, becomes more distinct, till at length it grows into the boisterous tumult of a hurricane. The inmates of the tents are alarmed, and cry out the well-known seaman’s call, “stand by the royal halyards.” It is a heavy squall approaching, and the warning voice serves to the inhabitants of the gullies as a hint to secure their tents against the violence of the approaching tempest. A few minutes later and we find ourselves in the midst of the storm; the air is filled with dust, intermixed with myriads of burning sparks, lifted from the numerous fire-places. The hurricane is so violent that it destroys and carries away tents, shakes substantial buildings, bends and breaks trees; and, after this storm of a most violent nature, a heavy shower follows, reminding one of an approaching deluge, and in a few minutes everything is again clear and calm. The dark cloud, charged with destruction, and which has imparted terror to every living being, is now to be seen far away on the horizon, wearing towards the south-east, and only a roaring noise is to be heard, something like as the receding sounds of the Niagara Falls, becoming fainter and fainter, until at a vast distance it dies away.”

14. The beautiful constellation represented in the accompanying diagram I was fortunate enough to witness. It took place on the 4th November, 1853.

During the summer season the mining population suffers from inflammation of the eyes; the cause of this evil may be attributed to a small kind of fly, which, having gone into the eye, sucks the moisture of that delicate organ, and causes a peculiar itching sensation; to relieve this, the sufferer has recourse to rubbing the eye, which cannot fail to injure it. I believe that the great heat of the solar rays, reflected from the gold-fields and the numerous white tents, may be considered an additional source of injury to the eye. One of the chief causes of inflammation of the eyes may be the caterpillars. These creatures web themselves on trees in the months of January and February, the time when the blight is most frequent, leaving behind them a great number of small hairs, covering the web as well as the wood. If this is used for domestic purposes, the hairs, coming in contact with the eye, either by rubbing it with the hand that handled the wood, or by other means, produces inflammation, exactly similar to what is produced in Europe by the migrating caterpillars. I never suffered in the eyes, as I was careful to take the precaution of smearing oil over my face, this being the best remedy to keep off insects. The aborigines of different countries are well aware of the useful application of oil; they smear and grease the whole of their bodies, to provide against being bitten by musquitoes and other insects. It is desirable to avoid touching the eyes with the bare dry finger; and veils and coloured eye preservers are therefore used at the Diggings as a means of protection.

In the month of April, 1853, nearly all the dogs at Bendigo were afflicted with the distemper, and I was informed that a great number of native dogs perished by the same cause. At the same time, the Bendigo population suffered much from influenza and rheumatic pains. It is questionable whether man and beast did not suffer from the same cause.

One great principle should be observed by every one resident in this colony, viz., *to dress warm at night*. To this effect an example is furnished to man by various animals indigenous to Australia; amongst others the opossum, which feeds during the cool nights on lofty trees. The effects of the sudden change of temperature is mostly felt by new arrivals, and by the less cautious of the mining population. During the heat-



L. Becker, Del.

6<sup>3</sup>/<sub>4</sub> P.M.

7 P.M.

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